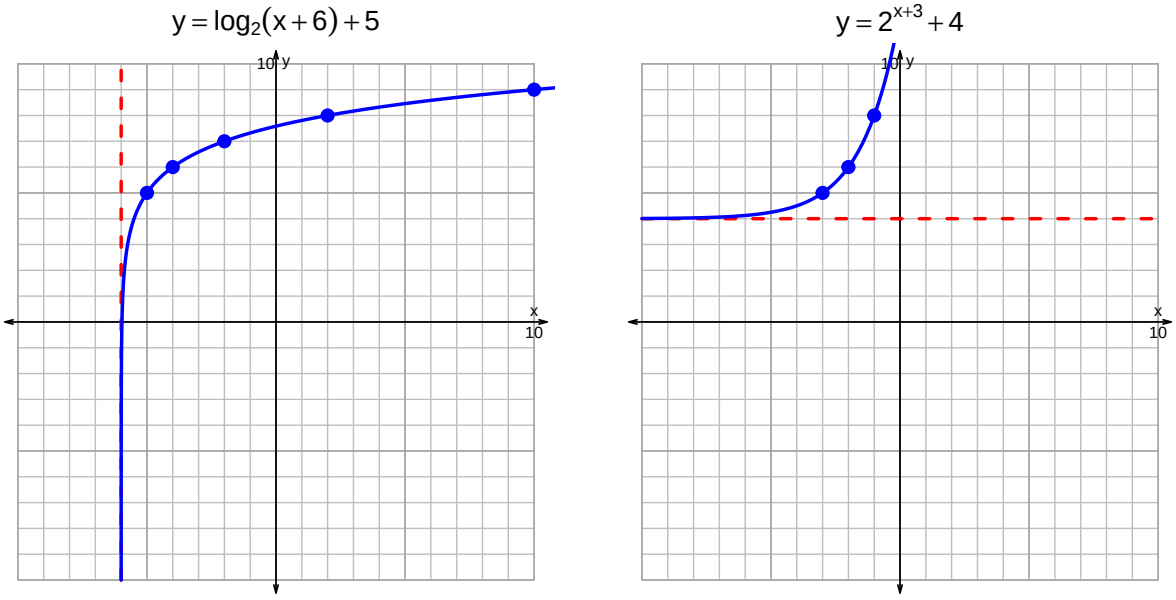
Name: Date:

s18quiz: EXP LOG (Solution v6)

1. Graph $y = \log_2(x+6)+5$ and $y = 2^{x+3}+4$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{4}{5}\right) \cdot 10^{-3t/7}$$

Divide both sides by $\frac{4}{5}$.

$$\frac{11 \cdot 5}{4} = 10^{-3t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{11 \cdot 5}{4}\right) = \frac{-3t}{7}$$

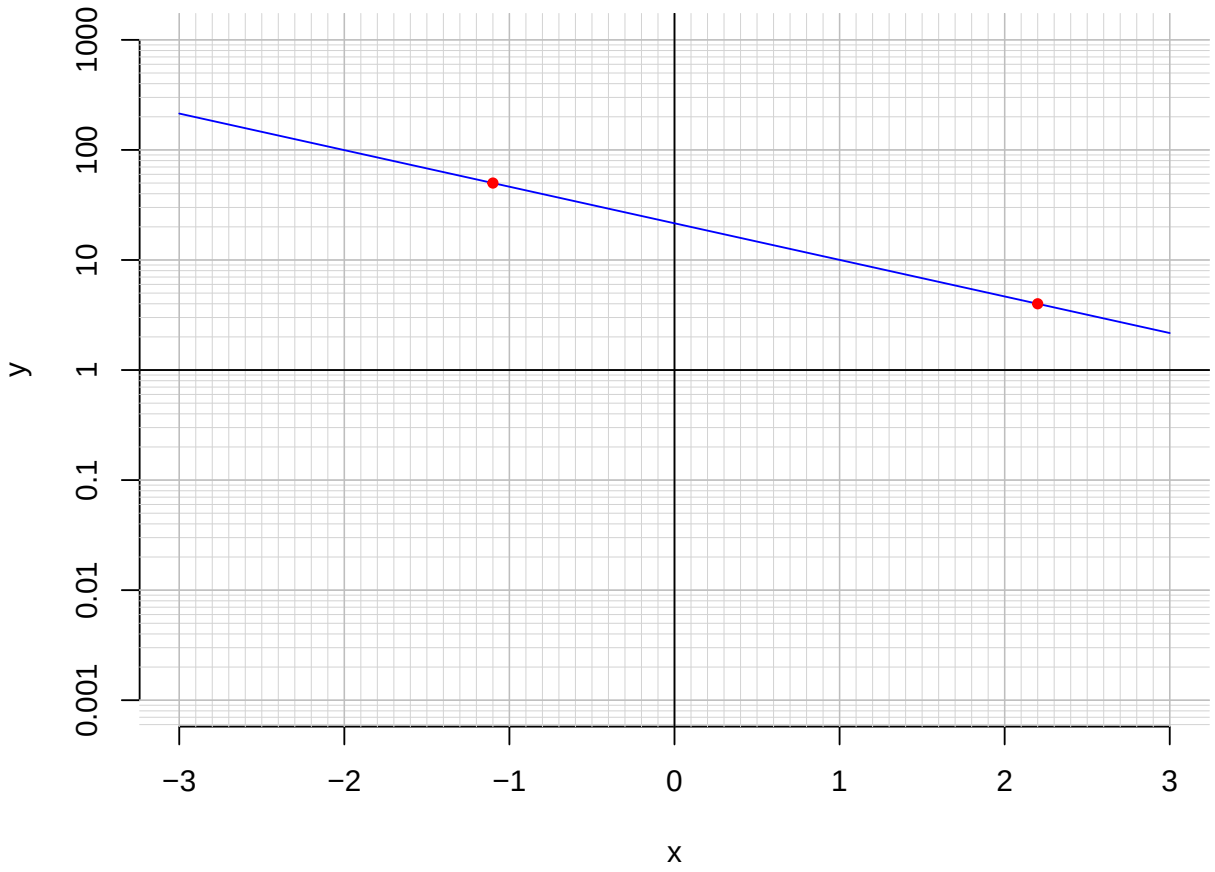
Divide both sides by $\frac{-3}{7}$.

$$\frac{-7}{3} \cdot \log_{10}\left(\frac{11 \cdot 5}{4}\right) = t$$

Switch sides.

$$t = \frac{-7}{3} \cdot \log_{10}\left(\frac{11 \cdot 5}{4}\right)$$

3. An exponential function $f(x) = 21.5 \cdot e^{-0.765x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-1.1)$.

$$f(-1.1) = 50$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{0.765} \cdot \ln\left(\frac{x}{21.5}\right)$$

c. Using the plot above, evaluate $f^{-1}(4)$.

$$f^{-1}(4) = 2.2$$